

Entry denied Eb 5/13/04



Date: **February 10, 2004**

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Re: **External Rotor Gas Turbine**
NPA Application Number 10/090260
PPA No. 60/273426

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While the claims are very broadly written in the Chamis engine, it is clear from the abstract and drawings that the purely axial flow Chamis engine never anticipated the design or features of the NPA 10/090260 or PPA 60/273426 (radial flow turbine/centrifugal or axial flow compressor). The Chamis engine was motivated by higher inlet temperatures made possible with ceramic turbine blades thrown into compression by centrifugal force. While ceramic inserts may be used in the radial engine's nozzles, the chief motivation for the external rotor radial engine design wasn't to throw ceramic into compression, but to eliminate blades. Without blades, blade tips or the associated problems with blade tip clearances, higher inlet temperatures are possible along with significant external cooling. The bearings in the radial flow engine are internal and inverted; The Chamis engine, truly an inside out design, is mounted on external bearings. The Chamis engine is described as a "drum" but the working fluid actually flows through an annulus. The radial flow engine, in contrast has no similar annulus.

The engines are radically different designs and no engineer can look at the drawings or abstract and come to a different conclusion. If some of my claims need to be rewritten, please contact me.

Bret Cahill



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The following is the PPA filed March 5, 2001

Bret Cahill